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10/556,943	11/02/2006	Herbert Bruder	32860-000959/US	5404

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EXAMINER	
TANINGCO, ALEXANDER H	
ART UNIT	PAPER NUMBER
2882	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/556,943	BRUDER ET AL.	
	Examiner	Art Unit	
	ALEXANDER H. TANINGCO	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5,6,8-16 and 18-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,6,8-16 and 18-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Amendments filed 02/28/2008 have been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 is indefinite insofar as it depends from cancelled claim 2.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 9-16, 19, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan et al. (US 2003/0163039) in view of Crawford (US 5,046,003).

With regards to claim 1, Pan et al. disclose a method comprising the steps of: scanning the examination object in one pass of at least one focus and at least one detector oppositely situated [0007]; performing the scanning of the examination region at a relative feed rate between gantry and couch [0007]; determining at least one static object area and at least one at least partially moving object area with reference to the

examination object with the aid of cyclical intrinsic movement, with determining performed during the scanning [0008]; and using, during a pass when scanning the examination object, a relatively low feed rate upon the determining of the at least one at least partially moving object area, and using a relatively higher feed rate upon the determining of the at least one static object area [0008; 0010]. Pan et al. fail to teach a method further comprising: a spiral movement of at least one focus and at least one detector oppositely situated; and determining a three-dimensional image of absorption coefficients with the aid of a multiplicity of sectional planes of an examination volume on the basis of the data obtained by scanning.

Crawford teach a method further comprising: a spiral movement of at least one focus and at least one detector oppositely situated (Col. 3 Line 31); and determining a three-dimensional image of absorption coefficients with the aid of a multiplicity of sectional planes of an examination volume on the basis of the data obtained by scanning (Col. 2 Lines 9-10). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Pan et al. to include the features of Crawford. One would have been motivated to make such a modification to reduce artifact thus improving image quality as taught by Crawford (Col. 1 Lines 9-10).

With regards to claim 3, Pan et al. as modified above disclose a method comprising a step wherein a position of a beating heart is determined in order to divide the examination object into the static and moving object areas [0004; 0023].

With regards to claim 6, Pan et al. as modified above disclose a method comprising a step wherein the transition between the feed rates is performed with a prescribed maximum acceleration [0027].

With regards to claim 9, Pan et al. as modified above disclose a method comprising a step wherein during scanning at a relatively low feed rate, the movement of the heart is temporally resolved by way of ECG leads and is divided into movement phases and rest phases, with only detected data from the rest phase being used to compile images [0023].

With regards to claim 10, Pan et al. as modified above disclose a method comprising a step wherein the scanning uses only detector data from a specific cycle rest phase of the cyclically moving area and [0023], uses all the measured detector data of the static area [0024].

With regards to claim 11, Pan et al. as modified above disclose a method comprising a step wherein the intensity of radiation emanating from the at least one focus is matched to a current feed rate [0029].

With regards to claim 12, Pan et al. as modified above disclose a method comprising a step wherein the intensity of radiation is matched by at least one of controlling and regulating a tube current [0009].

With regards to claim 13, Pan et al. as modified above disclose an apparatus comprising: at least one focus **14** from which a beam is emanated (Fig. 2); at least one detector **18** of planar design, including a multiplicity of distributed detector elements **20** for detecting the rays of the beam, the at least one focus being movable **12** relative to

the examination object **22** with a feed rate revolving about the examination object (Fig. 2); means for determining at least one static object area **54** and at least one at least partially moving object area **52** with reference to the examination object with the aid of cyclical intrinsic movement, with the determination performed during the scanning [0008; Fig. 1]; means for using, during a pass when scanning the examination object, a relatively low feed rate **110** upon the determination of the at least one at least partially moving object area, and using a relatively higher feed rate **114** upon the determining of the at least one static object area [0008; 0010; Fig. 3]. Pan et al. fail to explicitly teach an apparatus comprising: a spiral focal track; and means for determining a three-dimensional image absorption coefficients with the aid of a multiplicity of sectional plans on an examination volume on the basis of the data obtained by scanning.

Crawford teach an apparatus further comprising: a spiral movement of at least one focus and at least one detector oppositely situated (Col. 3 Line 31); and determining a three-dimensional image of absorption coefficients with the aid of a multiplicity of sectional planes of an examination volume on the basis of the data obtained by scanning (Col. 2 Lines 9-10). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Pan et al. to include the features of Crawford. One would have been motivated to make such a modification to reduce artifact thus improving image quality as taught by Crawford (Col. 1 Lines 9-10).

With regards to claim 14, Pan et al. as modified above disclose an apparatus wherein said means are implemented at least partially by at least one of programs and program modules [0009-0010].

With regards to claim 15, Pan et al. as modified above disclose an apparatus wherein an apparatus is provided for controlling the feed rate as a function of scanning area [0022].

With regards to claim 19, Pan et al. as modified above disclose an apparatus wherein an apparatus is provided for controlling the feed rate as a function of scanning area [0022].

With regards to claim 22, Pan et al. disclose an apparatus comprising: at least one focus **14** from which a beam is emanated (Fig. 2); at least one detector **18** of planar design, including a multiplicity of distributed detector elements **20** for detecting the rays of the beam, the at least one focus being movable **12** relative to the examination object **22** with a feed rate and revolving about the examination object (Fig. 2); means for determining a three-dimensional image of absorption coefficients with the aid of a multiplicity of sectional planes of an examination volume on the basis of the data obtained by scanning; means for determining at least one static object area **54** and at least one at least partially moving object area **52** with reference to the examination object with the aid of cyclical intrinsic movement, with the determining performed before the scanning by at least one topogram recording [0008; Fig. 1]; and means for using, during a pass when scanning the examination object, a first feed rate in the at least one at least partially moving object area and a second feed rate in the at least one static object area [0008; 0010; Fig. 3]. Pan et al. fail to teach an apparatus comprising a spiral focal track; and means for determining a three-dimensional image of absorption

coefficients with the aid of a multiplicity of sectional planes of an examination volume on the basis of the data obtained by scanning.

Crawford teach an apparatus further comprising: a spiral movement of at least one focus and at least one detector oppositely situated (Col. 3 Line 31); and determining a three-dimensional image of absorption coefficients with the aid of a multiplicity of sectional planes of an examination volume on the basis of the data obtained by scanning (Col. 2 Lines 9-10). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Pan et al. to include the features of Crawford. One would have been motivated to make such a modification to reduce artifact thus improving image quality as taught by Crawford (Col. 1 Lines 9-10).

With regards to claim 16, Pan et al. as modified above disclose an apparatus wherein the determination of static and moving object areas before the scan is performed with subsequent manual subdivision of the areas [0023].

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pan et al. (US 2003/0163039) and Crawford (US 5,046,003) as applied to claim 1 above, and in further view of Hsieh (US 6,421,552).

With regards to claim 8, Pan et al. as modified above disclose a method as recited above in claim 1. Pan et al. as modified above fail to teach a method further comprising: a step wherein the detection of the cyclical movement of the subarea of the examination object is performed in the current scanning area by comparing intensity measurement of at least one pair of time-offset rays on a common ray axis. Hsieh teaches a method comprising: wherein the detection of a cyclical movement of the

subarea of the examination object is performed in the current scanning area by virtue of the fact that the intensity measurement of at least one pair of rays on a common ray axis is compared to two consecutive instants (Abs.; Col. 3 Lines 18-39). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Pan et al. to include the features of Hsieh. One would have been motivated to make such a modification to improve determining cardiac motion as taught by Hsieh (Col. 3 Lines 15-17).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pan et al. (US 2003/0163039) and Crawford (US 5,046,003) as applied to claim 13 above, and in further view of Hsieh (US 6,421,552).

With regards to claim 18, Pan et al. as modified above disclose an apparatus as recited above in claim 13. Pan et al. as modified above fail to teach an apparatus wherein the detection of the cyclical movement of the subarea of the examination object is performed in the current scanning area by comparing an intensity measurement of two oppositely directed rays at two time instants. Hsieh teaches an apparatus comprising wherein the detection of the cyclical movement of the subarea of the examination object is performed in the current scanning area by comparing an intensity measurement of two oppositely directed rays at two time instants (Abs.; Col. 3 Lines 18-39). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Pan et al. to include the features of Hsieh. One would have been motivated to make such a modification to improve determining cardiac motion as taught by Hsieh (Col. 3 Lines 15-17).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pan et al. (US 2003/0163039), Crawford (US 5,046,003), Senzig et al. (US 6,023,494), and Baker et al. (US 2003/0092983) as applied to claim 20 above, and in further view of Hsieh (US 6,421,552).

With regards to claim 21, Pan et al. as modified above disclose a method as recited above in claim 20. Pan et al. as modified above fail to teach a method comprising: a step wherein the detection of the cyclical movement of the subarea of the examination object is performed in the current scanning area by comparing an intensity measurement of at least one pair of time-offset rays on a common ray axis. Hsieh teach a method comprising a step wherein the detection of the cyclical movement of the subarea of the examination object is performed in the current scanning area by comparing an intensity measurement of at least one pair of time-offset rays on a common ray axis (Abs.; Col. 3 Lines 18-39). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Pan et al. to include the features of Hsieh. One would have been motivated to make such a modification to improve determining cardiac motion as taught by Hsieh (Col. 3 Lines 15-17).

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pan et al. (US 2003/0163039) and Crawford (US 5,046,003) as applied to claim 22 above, and in further view of Hsieh (US 6,421,552).

With regards to claim 23, Pan et al. as modified above disclose an apparatus as recited above in claim 22. Pan et al. as modified above fail to teach an apparatus

wherein the detection of the cyclical movement of the subarea of the examination object is performed in the current scanning area by comparing an intensity measurement of two oppositely directed rays at two time instants. Hsieh teaches an apparatus wherein the detection of the cyclical movement of the subarea of the examination object is performed in the current scanning area by comparing an intensity measurement of two oppositely directed rays at two time instants (Abs.; Col. 3 Lines 18-39). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Pan et al. to include the features of Hsieh. One would have been motivated to make such a modification to improve determining cardiac motion as taught by Hsieh (Col. 3 Lines 15-17).

Claims 20 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan et al. (US 2003/0163039), Crawford (US 5,046,003), and Senzig et al. (US 6,023,494) and in further view of Baker et al. (US 2003/0092983).

With regards to claim 20, Pan et al. disclose a method comprising: performing the scanning of the examination region at a relative feed rate between gantry and couch [0022]; determining at least one static object area and at least one at least partially moving object area with reference to the examination object with the aid of cyclical intrinsic movement [0008]; and using, during a pass when scanning the examination object, a first feed rate in the at least one moving object area and using a second feed rate in the at least one static object area [0022]. Pan et al. fail to explicitly teach a method further comprising: scanning the examination object in one pass by a spiral movement of at least one focus and at least one detector oppositely situated;

determining a three-dimensional image of absorption coefficients with the aid of a multiplicity of sectional planes of an examination volume on the basis of the data obtained by scanning; and wherein the determining performed before the scanning by at least one topogram recording.

Crawford teach a method comprising: scanning the examination object in one pass by a spiral movement of at least one focus and at least one detector oppositely situated (Col. 3 Line 31); and determining a three-dimensional image of absorption coefficients with the aid of a multiplicity of sectional planes of an examination volume on the basis of the data obtained by scanning (Col. 2 Lines 9-10). It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the invention of Pan et al. to include the features of Crawford. One would have been motivated to make such a modification to reduce artifact thus improving image quality as taught by Crawford (Col. 1 Lines 9-10).

Senzig et al. teach performing a scout view to identify a location of transition region (Col. 6 Lines 44-45). It would have been obvious to one of ordinary skill in the art, at the time of invention to further modify the invention of Pan et al. to include the scout scan of Senzig et al. One would have been motivated to make such a modification to identify a location of region thus improving data analysis as taught by Senzig et al. (Col. 6 Lines 40-47).

Baker et al. teach a method comprising: wherein the determining performed before the scanning by at least one topogram recording [0030]. It would have been obvious to one of ordinary skill in the art, at the time of invention to further modify the

invention of Pan et al. to include the features of Baker et al. One would have been motivated to make such a modification to determine parameters to ensure that the object will be imaged completely during a scan as taught by Baker et al. [0030].

With regards to claim 5, Pan et al. as modified above disclose a method comprising a step wherein the determination of static and moving object areas before the scan is performed with subsequent manual subdivision of the areas [0023].

Response to Arguments

Applicant's arguments filed 02/28/2008 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "how a cardiac and non-cardiac region are determined") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

With regards to independent claim 1, applicant asserts Pan et al. (US 2003/0163039) (hereinafter referred to as "Pan") does not "determine the cardiac and non-cardiac regions during the scan." Examiner respectfully disagrees.

Pan discloses determining a cardiac scanning region and at least one non-cardiac scanning region [0008]. Moreover, Pan discloses a method wherein a cardiac region and non-cardiac region is determined [Fig. 3 note: 106, 108, and 112].

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "changing the feed rate during the scan in response to detecting cardiac and non-cardiac regions") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant also asserts Pan fails to disclose using "a relatively low feed rate upon determining of the at least one at least partially moving object area, and using a relatively higher feed rate upon determining of the at least one static object area." Examiner respectfully disagrees.

Pan discloses moving a variable speed table at a primary velocity during imaging of a cardiac region [0008 Lines 5-6]. Pan discloses moving a variable speed table at a secondary velocity during imaging of a non-cardiac region [0008 Lines 7-9]. Pan further discloses the variable table speed is preferably configured to move at a higher feed rate upon determining of a static object area and a relatively low feed rate upon determining of a partially moving object [0023 Lines 19-23]. Moreover, Pan discloses controlling a speed of the patient positioning table in response to detection of a particular region of the object [0009 Lines 9-15].

Examiner maintains rejection

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER H. TANINGCO whose telephone number is (571)272-8048. The examiner can normally be reached on Mon-Fri 8:00-4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander H Taningco/
Examiner, Art Unit 2882

/Courtney Thomas/
Primary Examiner, Art Unit 2882